MLM Writer: An Integrated Development Environment for Creating Arden Syntax Medical Logic Modules

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The Arden Syntax specification for sharable computerized medical knowledge bases has not been widely utilized in the medical informatics community. One of the many reasons given for not adopting Arden Syntax is a lack of commonly available tools for developing Arden Syntax knowledge bases (Medical Logic Modules). The MLM Writer is a Microsoft Windows hosted integrated environment designed to aid the knowledge engineer in the development of Arden Syntax Medical Logic Modules (MLMs).

During the past decade, researchers in the United States and abroad have worked to develop standards for sharing computerized medical knowledge bases. (1) One of the results of this standards development process is the standard specification known as Arden Syntax. (2)

The Arden Syntax standard has not been widely utilized in the medical informatics community. The reasons given for not adopting Arden Syntax are many. These reasons include incompatibility with existing systems or methods, lack of standard database and vocabulary for Arden Syntax, and lack of tools for developing Arden Syntax knowledge bases (Medical Logic Modules).

The MLM Writer was developed to provide the Windows user an integrated environment designed to aid in the development of Arden Syntax Medical Logic Modules (MLMs).

The MLM Writer offers the knowledge engineer a quick and reliable way to create, edit, and maintain Arden Syntax MLMs. Three different levels of support are offered: novice, intermediate, and advanced.

The MLM Writer's MLM Wizard (a "wizard" is a program which steps the user through an unfamiliar process) guides the novice user through the creation of MLMs using a series of screens which prompt the user for information while simultaneously providing a textual explanation of the type of information needed, why the information is needed, and the amount of progress in the creation of the MLM (e.g. Step 1 of 15). Currently the MLM Wizard limits the type of MLMs which can be created to simple threshold or time driven rules. Additional wizards for the creation of more complex MLMs are planned.

The intermediate user is guided through MLM creation by a series of templates which validate the type of information for each slot and perform some inter-slot checking. For example, only numbers may be entered in the date and time fields. The intermediate level user may also use the MLM Wizard.

In addition to the MLM Wizard and the MLM templates, the advanced user is allowed to directly enter MLMs in free text. The MLM Writer will verify the syntax of any MLMs entered in this way.

The MLM Writer uses the Microsoft Windows tabbed notebook metaphor (Figure 1) to differentiate between the various Arden Syntax categories and the two views (plain text or hierarchical structure) of the MLM.

The MLM Writer is part of an integrated system for generating, maintaining, compiling, and executing Arden Syntax-based knowledge bases. It integrates to a Windows-based syntax checker, compiler, and library system for tracking and maintaining MLMs.
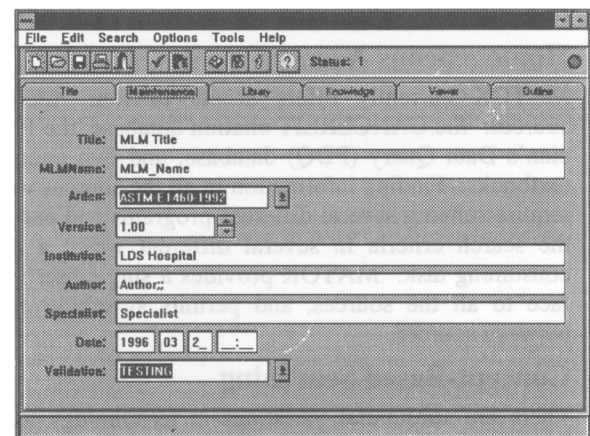

Figure 1. MLM Writer Sample Template Screen and Tabbed Notebook Metaphor

References

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